Appetite 179 (2022) 106305

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Adolescents' perspectives on soft drinks after the introduction of the UK Soft Drinks Industry Levy: A focus group study using reflexive thematic analysis

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ARTICLE INFO

Keywords:
Children
Adolescents
Soft drinks
Sugar
Soft drinks industry levy
Obesity

ABSTRACT

Background: The UK Soft Drinks Industry Levy (SDIL), announced in March 2016 and implemented in April 2018, is a fiscal policy to incentivise reformulation of eligible soft drinks. We aimed to explore perceptions of sugar, sugary drinks and the SDIL among adolescents in the UK post-implementation.

Methods: 23 adolescents aged 11–14 years participated in four focus groups in 2018–2019. A semi-structured topic guide elicited relevant perspectives and included a group task to rank a selection of UK soft drinks based on their sugar content. Braun and Clarke's reflexive thematic analysis was used to undertake inductive analysis.

Results: Four main themes were present: 1) Sweetened drinks are bad for you, but some are worse than others; 2) Awareness of the SDIL and ambivalence towards it 3) The influence of drinks marketing: value, pricing, and branding; 4) Openness to population-level interventions. Young people had knowledge of the health implications of excess sugar consumption, which did not always translate to their own consumption. Ambivalence and a mixed awareness surrounding the SDIL was also present. Marketing and parental and school restriction influenced their consumption patterns, as did taste, enjoyment and consuming drinks for functional purposes (e.g., to give them energy). Openness to future population-level interventions to limit consumption was also present.

Conclusions: Our findings suggest that adolescents are accepting of interventions that require little effort from young people in order to reduce their sugar consumption. Further education-based interventions are likely to be unhelpful, in contexts where adolescents understand the negative consequences of excess sugar and SSB consumption.

1. Introduction

Consumption of sugar-sweetened beverages (SSBs) is associated with all-cause mortality (Mullee et al., 2019), dental carries (Moynihan & Kelly, 2014), hypertension and coronary heart disease (Xi et al., 2015), and type 2 diabetes (Imamura et al., 2015). In 2018, across 42 countries, 16% of adolescents aged 11–15 years consumed SSBs at least once per day (World Health Organization, 2018). In the UK, 36% of young people aged 11, 13 and 15 reported consuming sugary carbonated soft drinks two to four times per week, 10% consumed these every day, with 15-year old boys the highest consumers (Brooks, Klemera, Chester, Magnusson, & Spencer, 2018).

To reduce population sugar consumption from SSBs, the UK government announced the Soft Drinks Industry Levy (SDIL) in March 2016. The SDIL was heralded as an important element of the Childhood Obesity Strategy in the UK (Cabinet Office, Department of Health, Social Care, Treasury, & 10 Downing Street, 2016; Department of Health et al., 2018) and is a national fiscal policy designed to incentivise the reformulation of eligible soft drinks to support the prevention of childhood obesity. It is one of the first instances of a fiscal measure introduced

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https://doi.org/10.1016/j.appet.2022.106305
Received 14 January 2022; Received in revised form 23 August 2022; Accepted 4 September 2022
Available online 9 September 2022

explicitly to reduce the amount of sugar available to the public from the food system and achieves this through a tiered structure based on sugar content (HM Revenue & Customs, 2016) (see box 1 for details of the SDIL).

The potential impacts of the SDIL are wide-ranging and dynamic, and interact within complex food and health systems. Evaluative findings to date show the announcement of the SDIL resulted in short term negative impact on domestic turnover of UK soft drinks manufacturers (Law, Cornelsen, Adams, Pell, et al., 2020), as well as stock market returns of four major UK soft drinks manufacturers (Law, Cornelsen, Adams, Penney, et al., 2020). However, these negative impacts were short-lived and did not continue once the SDIL was implemented in April 2018. Interviews with industry, civil society and academia indicate that marketing changed in response to the SDIL through reformulation; developing and acquiring new products and brands; changing messaging; increasing price; reducing portion size; changing distribution, placement and packaging; and developing new public relations campaigns. The strategy selected varied by company according to internal and external contextual factors (Forde et al., 2022; Forde, Penney, et al., 2019). By February 2019, the SDIL had encouraged reformulation of many eligible drinks with 33.8% fewer drinks containing enough sugar to meet the minimum threshold for the levy (Scarborough et al., 2020).

As well as the success or failure of the SDIL in terms of sugar reduction, governments are also sensitive to public perceptions of their policies. These perceptions, in particular public acceptability, can influence the likelihood of policy success (Diepeveen, Ling, Suhrcke, Roland, & Marteau, 2013; Sharp, Bellis, Hughes, Ford, & Lemma, 2020). In 2017, 2018 and 2019, 70%, 68% and 68% respectively of UK adults expressed support for the SDIL, with no evidence of a difference in acceptability of the SDIL over time (Adams et al., 2021). This is greater than support for SSB taxation in other countries where support amongst adults and children ranges from 39 to 66%, with a pooled proportion in one systematic review and meta-analysis of 42% (95% CI 38–47%) (Eykelenboom et al., 2019). Support tends to be greater when it is proposed that revenue will be used for health promoting purposes. Qualitative findings show mixed views on the effectiveness of SSB taxes indicating the complexity of public acceptability of SSB taxes (Eykelenboom et al., 2019). Specifically, regarding the SDIL, public acceptability has been explored through analyses of Twitter and newspaper coverage (Bridge, Flint, & Tench, 2020, 2021; Buckton, Fergie, Leifeld, & Hilton, 2019; Hilton et al., 2017).

Adolescent responses to hypothetical and actual SSB taxation internationally show understanding of the advantages and disadvantages, and intention to reduce consumption in response. However, they also display confusion surrounding the economics of such taxation, a lack of awareness of the existence of taxation and a view that it would not reduce consumption due to taste preference and 'addiction' (Krukowski, 2015; Ortega-Avila, Papadaki, & Jago, 2018). Qualitative research has also explored adolescent perceptions of sugary drinks or energy drinks more generally. Perceived need; physical, emotional and interpersonal benefits; sensory properties; and external cues and elements of the marketing mix (e.g. packaging, taste, value for money, and brand awareness) have all been found to influence purchasing and consumption (Brownbill, Braunack-Mayer, & Miller, 2020; J. Francis et al., 2017; Sylvetsky et al., 2020; Visram, Crossley, Cheetham, & Lake, 2017). However, given that adolescents are high consumers of SSBs, a key target for the intervention, and of an age where they are becoming purchasers in their own right, the lack of qualitative research on UK adolescent perceptions of the SDIL is a significant omission. Adolescent perceptions are particularly important, given the influence of acceptability of policies on government decision making. In this study, we therefore aimed to explore perceptions of sugar, SSBs and the SDIL among early adolescents in the UK following implementation of the SDIL in 2018.

2. Method

2.1. Study design

We adopted a qualitative interpretive design using focus groups. Focus groups allow participants to interact, discuss issues with each other, and facilitate the capture of views through clarification and exploration collectively as a group (Krueger & Casey, 2014). Conducting focus groups from an interpretive stance allows for the capture of intersubjective meaning, beyond the explicit, and to capture rich responses regarding social issues (O. Nyumba, T, Wilson, Derrick, & Mukherjee, 2018). In semi-structured focus groups participants are the drivers of conversation and researchers are facilitators of discussion between group members (Oates & Alevizou, 2017).

This study is part of the evaluation of the health impacts of the UK Treasury Soft Drinks Industry Levy (SDIL), funded by the National Institute for Health Research (White, 2017); a mixed methods project with Critical Realist positioning. Although this study uses an interpretive design, which typically rejects exploration of causal interpretation, the findings of this study will be contextualised (Sayer, 2000) within a synthesis work package in the wider research programmme.

The design was informed by guidelines for ethical research with children and young people (Shaw, Brady, & Davey, 2011) and the study was approved by the Humanities and Social Sciences Ethics Committee at the University of Cambridge, UK.

2.2. Research team and reflexivity

2.2.1. Research team

This research was conducted as part of a wider evaluation of the UK SDIL, including an interdisciplinary team of public health scientists with experience and expertise in sugar consumption, diet and taxation concerning obesity prevention and population health (White, 2017). TLP (F), CPJ (F) and RA (F) were post-doctoral research associates at the MRC Epidemiology Unit, University of Cambridge during this study. (TLP 2017–2019 & CPJ 2019–2022, RA 2018–2022). TLP has expertise in psychology, computer science, epidemiology, population health and systems thinking. CPJ and RA are chartered psychologists with expertise in behaviour change intervention development, health psychology and public health. SA (F) was employed as a Research Assistant to support data collection for the SDIL evaluation, with expertise in sport and exercise science, and physical activity interventions. MW (M) was Professor of Population Health Research and Programme Leader in the

Box 1
Details of the UK Soft Drinks Industry Levy

The SDIL is levied on manufacturers, importers and bottlers of SSBs in the UK and includes two tiers: 18 pence per litre for drinks that contain 5g–8g of total sugar per 100 ml, and 24 pence per litre for drinks that contain over 8g of sugar per 100 ml. A number of drinks are exempt from the levy: drinks that contain more than 75% milk, more than 1.2% alcohol and alcohol replacement drinks, 100% fruit juice and drinks sold as powders. In addition, manufacturers are exempt if they sell less than 1 million litres of drinks per year (if these are not exempt for other reasons listed above).

Population Health Interventions Programme at the MRC Epidemiology Unit, University of Cambridge, Chief Investigator for the SDIL Evaluation and co-lead for the qualitative work package. MW is medically trained and a public health scientist who leads research on understanding and evaluating change in food systems. SC (M) is Professor of Population Health at London School of Hygiene and Tropical Medicine, a geographer and epidemiologist, and one of the principal investigators for the SDIL evaluation and co-lead for the qualitative work package. JA (F) was MRC Investigator and Programme Leader in the Population Health Interventions Programme at the MRC Epidemiology Unit, specialising in research on dietary public health and food policy – particularly focusing on food marketing, food retailing, cooking and how these factors interact with socio-economic position. All have extensive experience in qualitative research design, data collection, analysis, interpretation, and reporting.

2.2.2. Reflexivity

A critical component of Braun and Clarke's thematic analysis is reflexivity (Braun & Clarke, 2019). Within this interpretive perspective, the search for objectivity during qualitative research is rejected. Instead, subjectivity is prized and researchers are viewed as instruments of data analysis who are embedded within their research, whose experiences influence their interpretation of the data (Gough & Madill, 2012). Good interpretive qualitative research is conducted when analysts are aware of their own influence and not only acknowledge this but are reflexive throughout to seek to understand how their positioning has influenced their interpretation (Lazard & McAvoy, 2020).

Throughout data collection, analysis, interpretation and writing the manuscript, the research team reflected on how their experiences and perspectives influenced this work. TLP and SA were mindful not only of their 'researcher' status during the conduct of focus groups, but also that they were from the University of Cambridge, which can carry a societal perception of elitism. Throughout facilitation TLP and SA were mindful to generate rapport with staff and participants initially to help counter any negative perceptions. In addition, they sought to act only as facilitators to discussion between participants, and to ensure that conversation was not directed at them. All researchers were outsiders to the participant group, none were teenagers from Essex, UK. However, CPJ attended secondary school in Cambridgeshire, UK in a similar demographic area, and RA presently resides in Essex, UK. MW, JA, SA and SC all reside in England, TLP currently resides in Canada. Whilst conducting the focus groups and analysis TLP became aware of the cultural differences between her Canadian upbringing and the English participants. For example, regarding brand names of products and colloquial terms for some drinks.

CPJ and RA conducted all parts of the analysis, and their training is predominantly in the psychology of health. Their experience in behavioural science and intervention design, led to initial thematic generation that focused on individual psychological components. For example, CPJ has experience in eating behaviours, which led to her identify the potential inadvertent impact of parental restriction on excess or binge-type consumption in adulthood. RA has experience in research on alcohol consumption, which led to her identify the parallels between sweetened drinks consumption patterns and alcohol consumption patterns in adults.

MW, SC and JA joined the analytic process during the development of themes and balanced the individualistic focus of CPJ and RA with their population health focus based on their experience in public health and population health interventions. This resulted in several revisions of the themes and interpretation of them to balance both of these analytic lenses (the individual and the population-focused). For example, the deeper expansion of theme 3 and discussions concerning the four Ps of marketing, extended this theme further from only branding and packaging.

TLP and SA further added to this interpretation through their experience of conducting the focus groups. JA, TLP and SA also aided interpretation through exploring further into the marketing elements in theme 3 and the influence of other work in CEDAR exploring the individual agency demands of population health interventions. For example, initial themes were developed exploring the concept of low agency within them based on this lens; however, the perspectives of TLP and JA in particular allowed the research team to re-interpret theme 4 as one of openness to population-level interventions removing the framing of lower agency within this theme.

Unfortunately, there was a change in staffing between data collection and analysis for this project. TLP left the position in September 2019 and CPJ joined in October 2019. TLP and CPJ were in communication throughout the analysis period; however, the team acknowledge that the results may have been presented differently had TLP led the analysis not CPJ.

2.3. Recruitment, participant selection and setting

A purposive sample of 13 state-funded and fee-paying schools within Cambridgeshire and Essex were approached, with two agreeing to organise and host focus groups (both in Essex). Students within school years seven to nine were recruited via a school administrator. Schools were asked to invite pupils to participate voluntarily if they were: a) within the school year; b) were familiar with sugar and soft drinks. Up to seven participants from each school year were selected by school staff and provided with age-appropriate study information packs to consider before deciding to participate. Parents/carers were provided with additional information and asked for their consent (opt-in). Focus groups were conducted on school premises at a time and location most convenient for the participants and the hosting school.

A total of 23 participants took part; all were teenagers aged 11–14 years, with 15 females and eight males. Participants aged 11–14 were selected as the SDIL was included as a policy within the government policy: 'Childhood Obesity. A Plan for Action' (Cabinet Office et al., 2016). Pupils aged 15 and over (year 10 +) were deemed to be more independent purchasers of soft drinks without parental influence and to be less representative of the childhood target of the policy of interest. Four focus groups with four to seven participants per group were conducted. One group with year seven pupils (aged 11–12), two groups with year eight pupils (aged 12–13) and one group with year nine pupils (aged 13–14) (Table 1). Four further focus groups were planned in March and April 2020 with three schools in Cambridgeshire, UK; however, due to the COVID-19 pandemic these could not be conducted.

2.4. Data collection

Data collection was undertaken from December 2018 to May 2019. Focus groups were conducted in participating schools, led by *TLP* and supported by *SA*; they were audio-recorded and typically lasted for 45–60 min. The semi-structured topic guide included three broad areas of inquiry: a) getting to know each other; b) views on sugar and sugary drinks; and c) views on the UK SDIL (supplementary file 1). Based on previous evidence that activities within focus groups with adolescents help increase fun, address short attention spans and reduce the need for peer approval (Norris, Aroian, Warren, & Wirth, 2012), an activity involving soft drinks was incorporated into the focus group to stimulate discussion, build cohesion within the group and maintain engagement. Six widely available sugary drinks (non-diet versions) were presented to participants at the beginning of each focus group. Following topic guide discussion areas (a) and (b), participants were then asked to rank these drinks from highest to lowest by their sugar content without examining the labels. Participants were then shown the correct answers by physically placing the number of sugar cubes each drink contained on the table, as well as informing them of the maximum number of cubes of added sugar the UK government recommends a child over 11 years of age should consume per day (seven cubes). Focus groups closed with topic area (c).

Table 1
Focus group participant details.

Focus Group Number	School	Year Group	Age Range (years)	Female Participants	Male Participants	Total Participants
1	1	Year 7	11–12	5	1	6
2	1	Year 8	12–13	5	2	7
3	1	Year 9	13–14	4	2	6
4	2	Year 8	12–13	1	3	4
Total				**15**	**8**	**23**

2.5. Analysis

Data were transferred securely to, and transcribed verbatim by, a trusted external company with identifying text such as personal and brand names anonymised. Transcripts were checked for accuracy against the audio files, and any inaccuracies corrected, or missing words added by CPJ. The analysis was facilitated using NVivo 12 software (QSR International, n.d.). The data was analysed using Braun and Clarke's reflexive thematic analysis and an interpretivist approach (Braun & Clarke, 2006, 2019, 2021). Thematic analysis allows for the identification of patterns within a dataset and interpreting the meaning of these patterns. An interpretive approach to analysis goes beyond simple description of the data with the aim of attaining a deeper understanding (Braun & Clarke, 2013, 2021). This type of thematic analysis does not advocate for the use of coding frames or quantitative inter-coder reliability checks and is not aligned to a particular theoretical framework (Braun & Clarke, 2021; Braun, Clarke, & Weate, 2016).

The data analysis was conducted iteratively and followed the six stages of reflexive thematic analysis: a) familiarisation; b) coding; c) generating initial themes; d) developing and reviewing themes; e) refining, defining and naming themes; and f) writing up (Braun & Clarke, 2021). CPJ and RA familiarised themselves with the data and generated initial codes independently to develop first impressions based on their own interpretive perspectives. Familiarisation was conducted through several passes of listening to the audio recordings and reading transcripts. Initial codes were generated for the entire dataset except for irrelevant passages of text. Examples of uncoded speech include moderators describing the focus group process and their background to participants. After initial coding, CPJ and RA met to generate initial themes, as well as explore similarities and differences in their interpretation. Lists of codes were created and printed off, patterns between codes were then highlighted by CPJ and RA through in-depth discussion. Then clusters of codes with a common theme were created and reflected on in relation to the research question. CPJ, RA, MW, SC, participated in a data clinic to develop and review themes. During this data clinic themes with extensive codes and quotes were presented in a document for preparatory reading, then researchers were asked to comment on these themes in depth, including their representativeness, how they relate to the research question and whether they adequately represented the data. CPJ, RA, MW, SC, TLP, SA, JA refined, defined and named the themes and agreed on the interpretation of the results through providing written feedback. CPJ wrote up findings with input from all authors.

3. Results

Four interlinked themes were derived inductively from this analysis, with a number of subthemes derived for each major theme (Box 1). Themes are presented in detail below, with quotations to demonstrate findings.

3.1. Theme 1: sweetened drinks are bad for you, but some are worse than others

3.1.1. Subtheme 1: - the health problems of drinking sugar, sweeteners, caffeine and chemicals

Participants expressed a perception that sugar and sweetened drinks are 'bad' for you. The terms 'bad' and 'unhealthy' were used often to describe sweetened drinks and this perception was based on the perceived health impacts of excess sugar consumption (dental health issues, cardiovascular disease, diabetes and obesity). Interestingly, non-sugar sweetened drinks (e.g. diet versions) were also deemed to be 'bad' with a perception of the negative health impacts of sweeteners and caffeine leading to this perception. Other 'added' ingredients were often described as 'chemical(s)' which were also described as 'bad' for health.

"If you drink too much of it, it will block up your arteries"
(Focus group 1, age 11–12)

"P: Too much sugar leads to illnesses.

P: Yeah. Can like make you have diabetes or, you know, more obesity
"

Box 1
Inductive themes and subthemes

1. Sweetened drinks are bad for you, but some are worse than others
   a. The health problems of drinking sugar, sweeteners, caffeine and chemicals
   b. A spectrum of un-healthiness
   c. Drinks are a treat, naughty and consumption is restricted by others
   d. Even though they're bad for us, people still drink them
2. Awareness of the SDIL and ambivalence towards it
   a. Mixed awareness of the SDIL and habituation to it
   b. Something needs to be done but I don't want it to affect me
3. The influence of drinks marketing: value, pricing and branding
   a. Price and value for money are important
   b. Packaging and branding influenced desirability of drinks
   c. Understanding of marketing techniques to increase consumption
4. Openness to population-level interventions
   a. Creative suggestions for future interventions
   b. Population-level interventions are acceptable

(Focus group 3, age 12–13)

"Because they sometimes just use like chemicals instead, like the artificial sweetener and that's also bad for you"

(Focus group 3, age 12–13)

3.1.2. Subtheme 2: - A spectrum of un-healthiness

Whilst participants labelled all sweetened drinks generally as 'bad' for them, this appeared to be on a spectrum where some drinks were described as 'less bad' than others to consume. Drinks which were viewed as 'natural' or 'fruit-based' were often described as better to consume than drinks without fruit. Properties of drinks also impacted their perception of 'badness' with 'flat' drinks perceived as better for them than 'fizzy drinks'. Links were made between fizzy drinks without fruit having a higher sugar content than still drinks that were natural or containing fruit. Energy drinks were described as the worst type of drink for health, particularly due to the other added ingredients in them, namely caffeine.

"personally I think if it's more carbonated it's like more sugar like in it"

(Focus group 2, aged 12–13)

"… they've [energy drinks] got like caffeine and like we'll get addicted and then like we'll keep having loads and then the sugar will build up and then we'll get blood clots in our heart and then we'll have a heart attack"

(Focus group 2, age 12–13)

When discussing the healthiness of fruit-based drinks, different descriptive terms were used interchangeably, such as: pure juice, flavoured waters, and squash or cordials, which are diluted, and have different nutritional composition. This suggested having less knowledge, and confusion over the health properties of fruit-based drinks. Finally, participants seemed to associate the addition of 'chemicals', in particular non-caloric sweeteners, with drinks being less healthy than fruit-based drinks or those with 'natural' sugars or ingredients, Nevertheless, diet drinks were considered healthier than full-sugar versions or drinks containing caffeine.

"I think like you have some drinks which they have sugar, but they also have healthy stuff where energy drinks, yes, they have sugar and they do have other stuff that you feel kind of not really that healthy, the other drinks, yes they have sugar but they're still slightly healthy"

(Focus group 4, age 13–14)

3.1.3. Subtheme 3 – drinks are a treat, naughty and consumption is restricted by others

The negative labelling of drinks as 'bad' was predominantly based on views gained from schools, the media and participants' parents. Sweetened drinks were discussed at length as something being restricted by parents including through limiting consumption to certain times of the day, outright bans and diluting drinks. Schools also restricted sweetened drinks by only permitting 'approved' drinks to be sold in canteens, which compounded messages that sweetened drinks are on a spectrum of healthiness that some sweetened drinks are acceptable to consume, and others are not.

"Yeah, like your parents will tell you, oh it's really bad for you or there's sometimes like news articles and stuff that are like, oh this brand is really bad for you, it like exposes things."

(Focus group 4, age 13–14)

"P: I was just going to say I've tried the [BRAND NAME] that isn't fizzy, like the still one, like the sport and I've tried that, but I'm not really allowed it.

I: You did like it or you didn't?

P: I did like it, but mum didn't really let me have it because it's apparently really bad for you."

(Focus group 1, age 11–12)

"P: You can get them here in the canteen

P: They're like health[y] like, not as much sugar as like normal… they've been approved"

(Focus group 2, age 12–13).

As a consequence of SSBs and sugar being labelled bad, participants discussed the need to consume these in moderation or in a balanced way. This also extended to SSBs being labelled a treat and something mostly consumed outside of the home – in restaurants, on car journeys and at parties. Certain types of SSBs, for example, flat fruit-based drinks diluted with water, were consumed at home, and fizzy drinks, often branded, were more likely to be consumed in restaurants or at 'parties'. This restriction applied mostly to some drinks, whereas others both the participants and their parents believed to be more 'healthy' or 'not as bad'.

"Yeah, special occasions because that's only really when I'm allowed. Like well I'm allowed fizzy drinks but it's mostly just like if it's like [BRAND NAME] and stuff then maybe just special occasions"

(Focus group 2, age 12–13)

"It's got to be balanced, like have a balanced diet, so say you drink [BRAND NAME] one day, like don't have it all the time, just have like water and stuff and whatever next"

(Focus group 4, age 13–14)

3.1.4. Subtheme 4: - Even though they're bad for us, people still drink them

Although participants demonstrated a perception of the health impacts of sugar and sweetened drinks, participants made somewhat contradictory statements expressing that they or 'people' are not aware of the consequences, evidenced by the fact "we", "they" or "people" still consume them. Evidence of othering was present, as participants clearly indicated that they thought "they" or "people" should not consume sugary drinks but ultimately still did so, referring mostly to others rather than themselves in these discussions. Some participants said that although they knew sugar was 'bad' and it could cause health problems, there were gaps in their knowledge about the specifics of what that would mean for their future health. This was attributed, for some participants, to the delayed nature of the health problems arising from excess sugar consumption.

"P: Um, I don't know, it's just like... I don't know. It's not a good thing, they should definitely drink less sugar because more sugar equals like sugar attacks and stuff, so maybe people should be more aware of that if you drink lots of sugar you'll get sick, so they'll stop drinking that much. Like can't you get diabetes from drinking or eating too much sugar?

I: Yeah.

P: Yeah, some people are aware of that, like I'm aware of that, I don't want to get diabetes but people still do it anyway so maybe …"

(Focus group 4, age 13–14)

"We all know that sugar's bad for us but we don't all know the effects of it as well as we do, like you have some sugar, oh no it's like bad but we don't actually know the effects of it afterwards, so that doesn't stop us from drinking it"

(Focus group 4, age 13–14)

3.2. Theme 2: awareness of the SDIL and ambivalence towards it

3.2.1. Subtheme 1: - mixed awareness of the SDIL and habituation to it

The SDIL was brought up by participants both independently of the topic guide and by facilitators in the focus groups. Facilitators asked if participants had heard of anything happening to reduce sugary drink consumption in the UK, to which participants either responded that they had, and offered the SDIL as an example, or that they hadn't. Participants also brought up the SDIL independently of the facilitators; however, it is unclear whether this is because they knew the topic of the focus group was to discuss it. One participant referred to seeing the SDIL charged on a receipt from a fast-food chain restaurant and, although not referring directly to the SDIL, during the discussions around price (theme 3) participants observed that drinks had become more expensive.

"[when discussing price and portion size] This is about the sugar tax, because if you make them more sugary you have to pay more, isn't that like the new law or something?"

(Focus group 1 age 11–12)

"INT [about SDIL] and what have you heard about it? Where did you hear it?

P: Well not before I heard about this survey really"

(Focus group 3 age 12–13).

"INT: Have you heard of anything that might have happened in the news recently?...

P: Is there like a sugar tax?"

(Focus group 4 age 13–14).

"… my nan looked at the receipt and they put sugar tax on. I'm like "what's that?" and my nan said "oh now they're starting putting sugar tax on"

(Focus group 2, age 12–13)

During the task to rank drinks by sugar content, one drink that had been reformulated and one drink whose size had reduced as a result of the introduction of the SDIL were included. Participants seemed unaware of these changes, expecting these drinks to still contain the highest amount of sugar due to their branding. Therefore, although some discussed being aware of the SDIL or 'sugar tax' they may not have fully understood the implications for the drinks shown in the task. Participants also discussed habituation to changes in soft drinks resulting from the SDIL. Once they were familiar with a new "healthier" environment it was easier to reduce their sugar and SSB consumption.

"[SMALLER PORTION DRINK] was really like lower than I thought it would be"

(Focus group 4, age 13–14)

"I thought they were going to be the same [sugar content] because they both said energy on them"

(Focus group 1, age 11–12)

"Yeah, because it's bigger. It's almost the same size... Well it's probably the same size as [FRUIT DRINK] but [FRUIT DRINK] contains a whole lot more sugar then [SPORT DRINK]."

(Focus group 4, age 13–14)

"Yeah. Because it stops you eating, because like probably if we didn't have those rules I'd probably, we'd probably end up, because I mean I'm used to it now but if I didn't have those rules from the beginning I'd probably be eating like lots of sweets and sugary drinks and stuff but now I'm used to it, it's not as hard."

(Focus group 2, 13–14)

3.2.2. Subtheme 2: something needs to be done but I don't want it to affect me

Participants believed that action should be taken to reduce sugar consumption on health grounds but did not want to be affected financially themselves or have reduced availability of drinks they wished to consume. During initial discussions among all participants, sweetened drinks were universally described as being 'bad' for health, and there was consensus that action needed to be taken to reduce consumption. When discussing the SDIL specifically however, in a different section of the focus group discussion, participants expressed their frustration at the SDIL affecting the price and taste of their favourite drinks. Participants only occasionally seemed aware of this cognitive dissonance, particularly when making suggestions on what else could be done; and some backtracked when experiencing a realisation that their suggestions would affect their own lives.

"Because like it's just going to… before when there was not anything about sugar tax, they were just like really cheap and they were just, also they were better quality, they just tasted better"

(Focus group 1 age 11–12)

"But I mean that's [SDIL] not as fair on like the people who don't really get it as much because like I hardly ever get it"

(Focus group 3 age 12–13).

3.3. Theme 3: the influence of drinks marketing: value, pricing and branding

3.3.1. Subtheme 1: Price and value for money are important

Participants raised issues of marketing, with the most salient being price and value for money. Generally, participants perceived value for money as a high priority for them and their parents, and this influenced purchasing patterns of sweetened drinks and parental behaviours. Private label (supermarket branded) drinks were perceived as better value for money than branded drinks, as well as drinks that could be diluted, for example, squash. However, only large variations in price, or promotions, were discussed as having an influence on purchasing, making drinks more desirable for both them and their parents.

"If you get them like a big pack they're cheap but if you buy them like individually they're more expensive"

(Focus group 2 age 12–13)

"sometimes they do like 50p cans sort of thing, so if something's on offer then I'd probably go for it"

(Focus group 3 age 12–13)

The influence of parents in the preferences and purchasing patterns of participants was clear in these discussions, and links to the previous theme. Not only were parents restricting their child's consumption explicitly for health reasons, but they were also restricting consumption more subtly by expressing to them that price and value for money is important in purchasing decisions.

"But it's cheaper when you have to add water so that's what my mum gets"

(Focus group 1 age 11–12)

"Because of the prices of all of them my mum always buys the off brand of them, so you can get like {SUPERMARKET]'s own brand, and like all of that"

(Focus group 1 age 11–12).

3.3.2. Subtheme 2: Packaging and branding influenced desirability of drinks

Branding also influenced participants' perceptions of drinks, particularly their sugar content. On the one hand, bubbles, energy, sports and fizziness were synonymous with a high sugar content for participants.

On the other hand, fruit-based drinks were perceived as 'less bad', due to their fruit content and "natural" sugars portrayed on the packing, linking to the findings in theme 1.

> "and also the [FRUIT DRINK] one it looks a bit more healthy because it's got like pictures of lemons and limes. But then the [REFORMULATED DRINK] doesn't look very healthy because it's got loads of bubbles on it"
>
> (Focus group 2, age 12–13)

Packaging and branding influenced the perception of drinks and their healthfulness, including whether drinks should be consumed for functional purposes. This was particularly apparent during the task, since packaging that showed fruit was perceived as better for you whereas bubbles indicated a drink was fizzy, which was considered less healthy. Drinks that used the word 'energy' on their packaging were classified as drinks to help give you energy (to combat tiredness), and subsequently worse for health, or containing the same amount of sugar as other 'energy' drinks. Unless this packaging or advertising contained indications that the drink was meant to be used for sport. This led to participants ranking fruit-based drinks as having lower sugar than the energy or sport drinks, when in fact they had a higher sugar content.

> "… has bubbles and bubbles aren't really that healthy for you"
>
> (Focus group 4, age 13–14)

> "I thought they were going to be the same [sugar content] because they both said energy on them"
>
> (Focus group 1 aged 11–12)

> "I: And then [FRUIT DRINK] is 12 cubes of sugar.
>
> P: Oh wow! That's mad
>
> P: I thought [FRUIT DRINK] was pretty good for you.
>
> P: I know, it's got them blackcurrants on."
>
> (Focus group 1 aged 11–12)

3.3.3. Subtheme 3: Understanding of marketing techniques to increase consumption

When discussing marketing methods, participants were not only aware of them but demonstrated a perception that these were intended to encourage the consumption of sweetened drinks. This was also most apparent during the task, after revealing the sugar content of drinks. Participants expressed their shock at drinks unexpectedly having more than their daily allowance of added sugar and went on to discuss their negative feelings following this. For some participants, these negative feelings were based on feeling deceived by companies manufacturing these drinks.

> "P: In my local shop there's a big, like big multipack on sale right in front of the store
>
> P: Because they know they're going to get loads of money from people buying it so they make sure everyone sees it.
>
> (Focus group 2, age 12–13)

> "I think companies are very deceiving and people need to know what they're actually drinking or eating"
>
> (Focus group 4 age 13–14)

3.4. Theme 4: openness to population-level interventions

3.4.1. Subtheme 1: Creative suggestions for future interventions

Participants made many different suggestions concerning how to reduce SSB consumption in addition to the SDIL. Some suggestions were based on taxation and inspired by the SDIL to use government policies, such as further taxation and a government-funded healthy soft drink company. Other suggestions targeted advertising and marketing and were linked to discussions from theme 3; including advertising bans on social and other media, clearer labelling of sugar content, reducing portion sizes, plain packaging and including health warnings like those seen on cigarette packets in the U.K. They also suggested that SSBs should only be allowed to be purchased by those doing sport and that the functional purpose of these drinks is useful in some contexts and should not be impacted by further intervention. Education was also suggested, although the specifics of this were not discussed in detail, only that 'people should be told' about sugar content, which related to discussions on the importance of clearer labelling. Finally, more extreme suggestions were also made, which included purchasing limits and credit card tracking to enforce these limits, as well as outright bans of SSBs.

> "I think they should be banned, like the TV or something, like they're not allowed to advertise energy drinks or sugary drinks that will make you really hyper or something, that are bad for you."
>
> (Focus group 4, age 13–14)

> "Make the bottles a bit smaller, like the [FRUIT DRINK] and the [SPORT DRINK], make them like the size of [COLA]."
>
> (Focus group 2, age 12–13)

> "… they should ask you at the counter like why do you need it and what you're going to do. So for example you've got a football match and you could say "okay here you go"
>
> (Focus group 3, age 12–13)

3.4.2. Subtheme 2: Population-level interventions are acceptable

During discussions on how to intervene to reduce SSB consumption further, there was a high level of acceptability expressed for population-level interventions. Participants seemed to feel that further government intervention was acceptable in most cases except the more extreme interventions mentioned previously – outright bans and credit card tracking. Discussions also considered the implementation of these interventions, with suggestions to use artificial intelligence, CCTV or national rationing books. Participants also expressed awareness of the potential economic impacts of interventions, in particular the potential effects on industry and jobs.

> "[IN RESPONSE TO CREDIT CARD TRACKING] It's a bit much though, like just for a fizzy drink, like what …"
>
> (Focus group 2, age 12–13)

> "I: But you think more like a system where you can only have a limited amount a week is better than banning?
>
> P: Yeah. Because if you ban them then the companies are going to be like well we can't sell them anymore, we're just going to shut down and then there will be no fizzy drink market out there.
>
> P: That would also be like losing jobs for so many people as well."
>
> (Focus group 3, age 12–13)

4. Discussion

4.1. Summary of main findings

To our knowledge, this is the first study to explore adolescents' perspectives of SSBs, sweetened drinks and the SDIL, following its implementation in the UK. It contributes to a very small existing literature on adolescents' responses to SSB taxation more generally. Participants were aware of the harms sweetened drinks could have on health, were mostly aware of the SDIL but were ambivalent about it. They were also greatly influenced by the marketing of products in particular value for money, packaging and branding, and were open to population-level interventions to reduce sugar consumption where they had to exert little effort to gain from them.

4.2. Strengths and limitations

Strengths of this work include the semi-structured and exploratory approach to the analysis, allowing participant discussion to generate themes without the influence of prior theory. The richness of the data generated by these focus groups is also a strength. Discussion flowed naturally and participants were able to discuss freely topics they believed pertinent, without a large amount of direction from facilitators. There are, however, some limitations to this work. Adolescents, although a key target of the SDIL, are not typically the primary purchasers of sweetened drinks consumed within the home (Gillison, Grey, & Griffin, 2020). The perspective of the primary home purchaser of soft drinks in response to the SDIL is thus missing from this analysis. However, 'pester power' has been found to influence parental purchases of SSBs suggesting participants do have some influence over home purchases (Pettigrew, Jongenelis, Chapman, & Miller, 2015).

In addition, awareness of the SDIL could be an artefact of exposure to study materials, in particular the participant information sheet and consent form, which referred to the SDIL as the topic of study. We could have framed the research more broadly and less specifically without mentioning the SDIL, but we feel that deceiving adolescent participants and their parents regarding the aim of focus groups would have been unethical.

Heterogenous purposive sampling was planned to ensure variation in perspectives was captured and to document differences between participant groups, particularly socio-economic status and rural vs urban upbringing. Unfortunately, due to recruitment challenges and staff changes, this sampling was only partly achieved. Additional focus groups (1 urban deprived, 1 urban very affluent, 1 rural mid-deprivation) were set up and due to take place in mid-March 2020. However, due to the COVID-19 pandemic these did not take place. As a result, recruitment to this study was lower than planned and only 2 schools were represented, with one school dominating the data. Therefore, the findings from this study may represent mid-level deprivation in semi-urban areas of the UK and the range of perspectives may be narrower than the researchers initially intended. Some pragmatic methodological decisions were made to reduce participant and school administrative burden. Member checking and participant confirmation of findings was not conducted, and participants were selected by school staff who were familiar with the pupils as opposed to research staff selected based on ensuring maximum variation on individual characteristics.

Finally, reflecting on the positionality of the researchers involved in this work it is important to acknowledge that all authors come from a public health background. This background may lead to interpretive perspectives to be absent from this work, for example those from industry or those of the insider in the group studied (adolescents in Essex, UK). As with all qualitative interpretive research, the findings are limited by the positionality of the research team and other analysts may uncover alternative meanings from the data.

4.3. Relationship to prior knowledge

Only one previous study has investigated adolescent perspectives of SSB taxation following implementation of a fiscal-based food policy. Ortega-Avila et al. (2018) found, in contrast to the present study, that participants in Mexico were mostly unaware of the Mexican SSB tax and less likely to think it would be effective (Ortega-Avila et al., 2018). This difference could be due to intentional marketing strategies by industry to make UK consumers aware of changes to their products. Participants in our study discussed the role of additives and non-caloric sweeteners as replacements for sugar, in both a positive and negative way, as well as highlighted that price had changed to make diet options 'cheaper' and full sugar options more expensive. Although the groups in Ortega-Avila et al.'s study discussed price, this was framed as something that would not impact consumption as the price increase in Mexico was not high enough (Ortega-Avila et al., 2018). Findings from our focus groups indicate that participants were more concerned with value for money (i.e. minimising the price per volume purchased rather than the absolute price of products). For example, participants discussed paying more for 2 L of drink than for a single can, but they perceived this as acceptable due to the larger volume.

Restriction of access to sweetened drinks by parents and others was a notable finding from these focus groups. As a response to the labelling of sweetened drinks as unhealthy, parents and schools were described as limiting participants' intake or restricting it completely. Parental dietary restriction has been found to be associated with children developing a preference for the restricted food (Ventura & Birch, 2008), and increased food intake and weight status (Birch, Fisher, & Davison, 2003; Faith et al., 2004; L. A. Francis & Birch, 2005). Although literature in this area is mixed, for example, some studies propose reverse causation mechanisms where restrictive food practices are a response to the child's weight (Payne, Galloway, & Webb, 2011; Rhee et al., 2009; Spruijt--Metz, Li, Cohen, Birch, & Goran, 2006), it is still important to understand the possible implications of our findings in this context. Larsen et al. (2015) discuss the importance of parents as 'gatekeepers in this obesogenic world' and emphasise covertly improving the home food environment is a preferred strategy to overtly restrictive food parenting practices (Larsen et al., 2015). For example, parents should avoid having sweetened drinks in the home, rather than limiting the amount a child can have of drinks in the home. A mixture of covert strategies and overt strategies of restriction were demonstrated in our findings; however, the latter may inadvertently lead to increased consumption of sweetened drinks secretly or outside the home by this young adolescent age group (Ventura & Birch, 2008).

Additional similarities were found with our research and previous study findings, including the importance of 'functionality' of drinks, which in some instances impacted choice of beverage over and above sugar content, particularly the use of drinks for sporting purposes (Brownbill et al., 2020; Fairchild, Broughton, & Morgan, 2017; J. Francis et al., 2017; Sylvetsky et al., 2020). The contradiction between awareness of the health consequences of excess sugar, perceptions of drink healthiness and actual consumption is mirrored in other studies; that is participants are aware they and others should not consume SSBs, but they discuss doing so (Brownbill et al., 2020; MacGregor et al., 2019). In addition, the impact of parental restriction on moderating adolescent SSB consumption was also found in work by Visram et al. (2017). Having an interest in healthful eating was found to be considered a socially risky perspective in adolescents (Stead, McDermott, MacKintosh, & Adamson, 2011), which could also account for this discrepancy between 'knowing' they should not consume SSBs but doing so anyway. The influence of elements of the marketing mix (i.e. Price, Place, Product, Promotion (The '4Ps') (Kotler, 1999)) was also found, with price and promotion the most important factors related to participant consumption (J. Francis et al., 2017; Sylvetsky et al., 2020; Visram et al., 2017).

4.4. Interpretation and implications for policy and practice

Participants were open to population-level interventions. Suggestions made were mostly for population-level interventions that make fewer demands on individuals and their resources, in order for individuals to benefit (Adams, Mytton, White, & Monsivais, 2016). These findings could help counter 'nanny-state' arguments against paternalistic government intervention on sweetened drinks, for example, that people do not want unnecessary intrusion into their lives (Magnusson, 2015). Our findings demonstrate that whilst adolescent consumers in the UK may be ambivalent about the SDIL specifically, they did have an understanding that it is important, and expressed a preference for this kind of population-based intervention. Further, participants expressed being able to habituate to the SDIL and that it becomes easier to reduce their sugar consumption once they are used to a new policy. These

findings are comparable to those exploring parent perspectives, where parents also report a preference for population-level, structural interventions, such as removal of less healthy food at supermarket checkouts (Ford et al., 2020).

The findings that adolescents were greatly influenced by the marketing of sweetened drinks and find it deceitful (MacGregor et al., 2016), indicates that population-level strategies targeting the 4Ps should also be implemented alongside the SDIL (Cairns, Angus, Hastings, & Caraher, 2013). Previous research examined marketing of SSBs in a UK context and found that self-reported exposure to SSB promotion is associated with consumption, indicating that adolescents in the UK may be influenced by marketing methods and, as a result, consume more SSBs (Forde, White, et al., 2019). Soft drinks marketing following the implementation of the SDIL has also been investigated, with companies continually responding to changes in their external and internal context, identifying catalysts, defining brand positioning, and enacting multiple strategies in response (Forde et al., 2022; Forde, Penney, et al., 2019). Given the dynamic and responsive nature of soft drinks marketing demonstrated by these studies, it is important to recognise that capturing acceptability through conscious and verbalised means, such as focus groups, may miss unconscious influences on participants that they are unaware of or unable to articulate, such as marketing. The cognitive dissonance and othering (where participants discussed that 'people' should moderate their consumption of SSBs as opposed to 'I' or they should personally moderate consumption) observed in the present study could be evidence of this. Participants had high levels of knowledge about the health impacts of excess sugar consumption yet, were hesitant to be impacted by the strategies they proposed to reduce consumption.

These comments could also highlight 'othering' of people living with obesity, particularly given the framing of the SDIL within obesity policy (Cabinet Office et al., 2016; Department of Health et al., 2018). It could be argued that situating dietary public health policies like the SDIL within an 'obesity' narrative creates an attitude amongst the target group of the intervention that the health problems associated with excess sugar consumption 'do not apply to them' due to their status as 'normal' compared with the perceived target of the intervention (Taylor, 2011). Unconscious mechanisms such as this are important to explore alongside acceptability to capture fully the impact of the SDIL on adolescents in the UK, including the interaction with policy and obesity stigma.

4.5. Conclusions

Young people's perspectives on SSBs and sweetened drinks show high levels of awareness of the health problems associated with excess sugar consumption however awareness of the SDIL was mixed. Population-level interventions like the SDIL were seen as acceptable. Sweetened drinks generally were perceived as 'bad' and restricted by parents and schools. However, sweetened drinks were also viewed on a spectrum of healthiness, with fruit-based drinks perceived as the least 'bad'. Marketing greatly influenced participants' perceptions of and preferences for SSBs, particularly packaging, taste and value for money. Contradictory views were held such that, whilst participants were ambivalent about the SDIL in particular, they acknowledged the need for population-level interventions to reduce general consumption. Participants were however hesitant that future interventions would impact their own consumption.

Ethical statement

The design was informed by guidelines for ethical research with children and young people (Shaw et al., 2011) and the study was approved by the Humanities and Social Sciences Ethics Committee at the University of Cambridge, UK.

Author contributions

MW, SC & JA secured funding and planned the overall SDIL evaluation of which this research is a part. TLP, MW, SC designed the study, TLP led data collection with the assistance of SA. CPJ led the conduct and design of the analysis supported by RA. CPJ led the interpretation of the findings supported by RA, MW, SC and JA. CPJ wrote up the findings with input from RA, MW, SC, TLP, SA & JA.

Funding

This project was funded by the NIHR Public Health Research programme (Grant Nos. 16/49/01 and 16/130/01). At the time this study was conducted CPJ, MW, RA, TLP, SA & JA were also supported in part by: Programme grants to the MRC Epidemiology Unit from the Medical Research Council (grant No. MC_UU_12015/6 and MC_UU_00006/7); and the Centre for Diet and Activity Research (CEDAR), a UKCRC Public Health Research Centre of Excellence – funding from the British Heart Foundation, Cancer Research UK, the Economic and Social Research Council, the Medical Research Council, the National Institute for Health Research, and the Wellcome Trust, under the auspices of the UK Clinical Research Collaboration is gratefully acknowledged. The views expressed are those of the authors and not necessarily those of the any of the above named funders. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Data and code availability

The lead author has full access to the data reported in the manuscript.

Declaration of competing interest

None.

Data availability

The data that has been used is confidential.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appet.2022.106305.

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